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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,864	07/14/2003	Hiroshi Shigetaka	9281/4602	6963

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EXAMINER

HOLTON, STEVEN E

ART UNIT	PAPER NUMBER
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2629

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09/25/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/618,864	Applicant(s) SHIGETAKA, HIROSHI	
	Examiner Steven E. Holton	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 8-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 8-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is made in response to applicant's amendment filed on 6/23/2009. Claims 1-3 and 8-12 are currently pending in the application. An action follows below:

Response to Arguments

2. Applicant's arguments, see pages 6-8, filed 6/23/2009, with respect to the rejection(s) of claim(s) 1-3 and 8-12 under 35 USC 103(a) have been fully considered and are persuasive in light of the amendments to the claims. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art in combination with previously presented prior art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerpheide et al. (USPN: 6680731) in view of Gerpheide (USPN: 5861875) and in further view of Taylor et al. (USPgPub: 2003/0025679), hereinafter Taylor, and in further view of Asher (USPN: 5159159).

Regarding claims 1 and 8, Gerpheide in the '731 patent discloses a touch sensitive input device formed on a flexible substrate (col. 5, lines 24-28 and lines 55-58), and the substrate having an extension (Fig. 10A, elements 82 and 84) with a circuit substrate provided in the extension (Fig. 10A, element 82). Gerpheide further discloses the touch sensor having a flexible extension area (10A, element 84) connecting to a non-flexible circuit section (Fig. 10A, element 82). Wiring connecting the touch pad with the non-flexible circuit section is laid through the flexible extension to connect the two sections (col. 7, lines 25-41). Regarding the bonding of the touch sensor to a reverse side of a support plate, Gerpheide discloses attaching the touchpad to the underside of the cover of a keyboard case (col. 4, lines 8-12; col. 5, lines 61-62; and col. 7, lines 30-33). The Examiner agrees that the '731 patent does not specifically use the term 'bonding' but does use adhering (col. 5, line 61) and attaching (col. 6, line 31) to describe the connection between the touchpad and the keyboard cover. The Examiner interprets this action to read on the concept of 'bonding' based on the '731 patents teaching to directly attach the touch sensor to the underside of the keyboard cover for support. The '731 patent also notes the top plate can be 'arcuate' (col. 4, line 10) which indicates a curved support plate could be used.

However, the '731 patent does not expressly discuss the layout of the sensor electrodes or the specific use of insulating layers. The '731 does disclose using touch sensors developed by the '731 patent assignee, the Cirque Corporation.

Gerpheide in the '875 patent discloses a touchpad input sensor owned by the Cirque Corporation that provides a capacitive touchpad sensor that includes a flexible

insulating substrate (Fig. 8a, element 380) with a grid of electrodes applied to the underside of the substrate (Fig. 8a, element 130 directly below element 380).

Underneath the first set of electrodes is an insulating layer (Fig. 8a, element 370) and finally a second set of electrodes aligned in the opposite direction (Fig. 8a, element 130). The layout of the electrodes is shown in more detail in Fig. 8b. The '875 patent further shows the touchpad being attached underneath a keyboard body surface (Fig. 2).

At the time of invention it would have been obvious to one skilled in the art to combine the teachings of Gerpheide in the '731 and '875 patents to produce a device as described in claims 1 and 8. The '731 patent provides a flexible touch sensor that is bonded to the reverse side of a curved support plate and the '875 patent provides a electrostatic capacitance type touch input sensor using arrays of X and Y electrodes formed on a substrate with an insulating layer. It would have been logically obvious to use the suggestion of the '731 patent to use touch sensors produced by the Cirque Corporation, such as the touch sensor described in the '875 patent.

However, the combination of the '731 and '875 patents do not disclose, "wherein the Y electrodes are connected to the lead wiring via a through-hole part provided on the insulating layer". Gerpheide only discloses bundling the lead wiring through a flexible extension to connect to the non-flexible circuit board.

Taylor discloses a touchpad input system using two substrates having X and Y wiring grids (Figs. 6 and 7 show the different wiring layers). Taylor further shows bundling the lead wiring through a single extension area (Fig. 6, the bunched wiring

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leads at the top of the figure). Also Taylor shows one of the layers of electrodes travelling through holes so that all X and Y electrodes are bunched at the same extension layer (Figs. 6 and 7, the six circular donut shapes in the upper left area that shown on both of the figures correspond to wiring through-holes). The Examiner notes that through-holes (sometimes called a wiring via) are well known in the art as a technique used in multilayered circuitry.

At the time of invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Gerpheide in the '731 and '875 patents with the teachings of Taylor to produce a touch sensor with multiple layers using through-holes to bundle all X and Y electrodes into a single extension section for connecting with the non-flexible circuit substrate. The flexible touch sensor of Gerpheide could be modified to include the use of through-holes to group the lead wiring into a single extension area as shown by Taylor. The rationale would be to use a known technique of forming a multi-layer touch sensor with an extension for connection to an external circuit. The wiring techniques of Taylor could be used to replace the wiring techniques of Gerpheide to produce the same result.

However, the combination of Gerpheide and Taylor does not expressly disclose, "wherein a protrusion dimension of a portion of the insulating layer which overlaps the extension section is shorter than a protrusion dimension of the extension section such that the insulating layer does not overlap an end portion of the lead wiring of the X and Y electrodes bunched in the extension section."

Asher discloses a touch pad having X and Y electrodes (Fig. 1, elements 30 and 31) that are budled into a protrusion (Fig. 1, the extension in the top left of substrate 21 leading away from the touch pad area). Asher further discloses an insulating layer (Fig. 3, element 23) covering the traces on the substrate and also extending into the extension area, but having a dimension so that it does not overlap the end portion of the extension section (Fig. 3, element 23 extends into the extension area but stops before the end of the extension to not cover the end of the extension section).

At the time of invention it would have been obvious to one of ordinary skill in the art to modify the teachings of Gerpheide in the '731 and '875 patents and Taylor with the teachings of Asher to produce a flexible capacitive touch sensor with multiple layers and an insulating substrate. The flexible touch sensor of Gerpheide and Taylor could be modified so that the insulating layer was reshaped so that it partially overlaps the extension area holding the lead wires for the X and Y electrodes. The change in shape would be a matter of design choice for one of ordinary skill in the art to select a size of insulating layer to cover electrical traces so that unwanted contact with the traces could be avoided. Thus, it would be obvious to combine the teachings of Gerpheide, Taylor, and Asher to produce a touchpad as described in claims 1 and 8.

Regarding claims 2 and 10, Gerpheide et al. discloses fitting the touch sensor to the underside of a curved surface such as the wrist rest of a keyboard (col. 5, lines 12-14). This would be a recessed area of the surface to hold the input sensor area.

Regarding claim 9, Gerpheide et al. discloses fitting the touch sensor on the underside of arcuate surfaces (col. 5, lines 16-18).

Regarding claim 3, Gerpheide et al. discloses highlighting the area on the housing or support surface that is above the touch area so that a user is able to determine where the touch sensor is located (col. 5, line 64 – col. 6, line 2). It would be a matter of design choice for one of ordinary skill in the art to form the support surface with a texture, projecting area or recessed portion matching the shape of the touch sensor to indicate the location of the touch sensor along with or instead of a visual highlight.

Regarding claims 11 and 12, Gerpheide et al. discloses that the PC board is preferably attached beneath the flexible substrates of the touchpad to reduce the overall area needed to attach the touchpad inside the casing (col. 7, lines 25-41). Therefore, it would be a matter of design choice for one skilled in the to fold the PC board underneath the flexible substrates as shown by Gerpheide et al. or to connect the PC board to the underside of the casing next to the flexible substrates.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571)272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bipin Shalwala/

Supervisory Patent Examiner, Art Unit 2629

/Steven E Holton/

Examiner, Art Unit 2629

September 21, 2009